What is claimed is:

1. An isolated polynucleotide comprising:

(a) SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20;

(b) a fragment of at least 15 contiguous nucleobases of SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20,

(c) a nucleic acid sequence which, due to degeneracy in genetic coding, comprises variations in nucleotide sequence as compared to SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20, but which still encodes the same protein; or

(d) a nucleic acid sequence which hybridizes under stringent conditions to an antisense sequence of SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20.

2. An antisense oligonucleotide which hybridizes to a polynucleotide of claim 1.

3. A vector comprising the polynucleotide of claim 1.

4. A host cell expressing the vector of claim 3.

5. A method for producing a MSG polypeptide comprising culturing the host cell of claim 4 under conditions which promote expression of the polynucleotide and isolating polypeptide expressed in the cells.

6. A method for producing a cell expressing a MSG polypeptide comprising transforming or transfecting a cell with the vector of claim 3 so that the cell, under appropriate culture conditions, expresses a MSG polypeptide.

7. A polypeptide encoded by the polynucleotide of claim 1.

8. An antibody which is immunospecific for the polypeptide of claim 7.

9. A MSG for diagnosing mammary gland cancer comprising a polynucleotide of claim 1 or a polypeptide encoded thereby.

10. A method for diagnosing the presence of mammary gland cancer in a patient comprising:

(a) determining levels of a MSG of claim 9 in cells, tissues or bodily fluids in a patient; and

(b) comparing the determined levels of MSG with levels of a MSG of claim 9 in cells, tissues or bodily fluids from a normal human control, wherein a change in determined levels of MSG in said patient versus normal human control is associated with the presence of mammary gland cancer.

11. A method of diagnosing metastases of mammary gland cancer in a patient comprising:

(a) identifying a patient having mammary gland cancer that is not known to have metastasized;

(b) determining levels of a MSG of claim 9 in a sample of cells, tissues, or bodily fluid from said patient; and

(c) comparing the determined MSG levels with levels of a MSG of claim 9 in cells, tissue, or bodily fluid of a normal human control, wherein an increase in determined MSG levels in the patient versus the normal human control is associated with a cancer which has metastasized.

12. A method of staging mammary gland cancer in a patient having mammary gland cancer comprising:

(a) identifying a patient having mammary gland cancer;

(b) determining levels of a MSG of claim 9 in a sample of cells, tissue, or bodily fluid from said patient; and

(c) comparing determined MSG levels with levels of a MSG of claim 9 in cells, tissues, or bodily fluid of a normal human control, wherein an increase in determined MSG levels in said patient versus the normal human control is associated with a cancer which is progressing and a decrease in the determined MSG levels is associated with a cancer which is regressing or in remission.

13. A method of monitoring mammary gland cancer in a patient for the onset of metastasis comprising:

(a) identifying a patient having mammary gland cancer that is not known to have metastasized;

(b) periodically determining levels of a MSG of claim 9 in samples of cells, tissues, or bodily fluid from said patient; and

(c) comparing the periodically determined MSG levels with levels of a MSG of claim 9 in cells, tissues, or bodily fluid of a normal human control, wherein an increase in any one of the periodically determined MSG levels in the patient versus the normal human control is associated with a cancer which has metastasized.

14. A method of monitoring a change in stage of mammary gland cancer in a patient comprising:

(a) identifying a patient having mammary gland cancer;

(b) periodically determining levels of a MSG of claim 9 in cells, tissues, or bodily fluid from said patient; and

(c) comparing the periodically determined MSG levels with levels of a MSG of claim 9 in cells, tissues, or bodily fluid of a normal human control, wherein an increase in any one of the periodically determined MSG levels in the patient versus the normal human control is associated with a cancer which is

progressing in stage and a decrease is associated with a cancer which is regressing in stage or in remission.

15. A method of identifying potential therapeutic agents for use in imaging and treating mammary gland cancer comprising screening molecules for an ability to bind to a MSG of claim 9 wherein the ability of a molecule to bind to MSG is indicative of the molecule being useful in imaging and treating mammary gland cancer.

16. A method of imaging mammary gland cancer in a patient comprising administering to the patient the antibody of claim 8.

17. The method of claim 16 wherein said antibody is labeled with paramagnetic ions or a radioisotope.

18. A method of treating mammary gland cancer in a patient comprising administering to the patient the antibody of claim 8.

19. The method of claim 18 wherein the antibody is conjugated to a cytotoxic agent.

20. A method for identifying compounds which antagonize or agonize the MSG polypeptide of claim 7 comprising:

(a) contacting cells which express the MSG polypeptide of claim 7 or cell membranes expressing the MSG polypeptide of claim 7 with a candidate compound; and

(b) monitoring the cells for changes in MSG polypeptide activities or binding as compared to cells or cell membranes not contacted with the candidate compound.

21. A MSG polypeptide agonist identified by the method of claim 20.

22. A MSG polypeptide antagonist identified by the method of claim 20.

23. A vaccine comprising a MSG polypeptide or a vector expressing a MSG polypeptide which induces an immune response against the MSG polypeptide in a mammal.

24. A method of inducing an immune response against a MSG polypeptide in a mammal which comprises administering to the mammal the vaccine of claim 23.

25. A method of treating mammary gland cancer in a patient comprising administering to the patient the vaccine of claim 23.